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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/919,533	07/31/2001	John Frederick Hayfield	CRYO/US-56	4377
22875	7590	11/13/2003	EXAMINER	
GERALD W SPINKS P. O. BOX 2467 BREMERTON, WA 98310			CUEVAS, PEDRO J	
			ART UNIT	PAPER NUMBER
			2834	

DATE MAILED: 11/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/919,533

Applicant(s)

HAYFIELD, JOHN FREDERICK

Examiner

Pedro J. Cuevas

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133)
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 2 and 3, filed July 21, 2003, with respect to the rejection(s) of claim(s) 5-9 under 35 U.S.C. § 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent No. 6,280,088 to Leuthold et al.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,642,088 A to Unger in view of U.S. Patent No. 4,850,100 to Stokes, further in view of U.S. Patent No. 6,280,088 to Leuthold et al.

Unger disclose the construction of a magnet support sleeve, comprising:

- a hollow cylindrical metal support sleeve (22);
- a plurality of magnets (20) positioned on a surface (24) of said support sleeve;
- at least one mounting bracket (32) fastened to said support sleeve;
- at least one angled lip (100) on said at least one mounting bracket.

However, it fails to disclose:

- a plurality of beveled bearing surfaces on said plurality of magnets, each said bearing surface being beveled at a first acute angle relative to said support sleeve; and

each said bearing surface being contacted by said at least one lip on said mounting bracket, angled at a second acute angle relative to said support sleeve, to hold said plurality of magnets in place on said support sleeve.

Stokes teach the method of making a rotor assembly having:

magnets (24, 26, 28, 30) with at two beveled bearing surface (Figure 3) on the magnets, said bearing surface being beveled at a first acute angle; and

wherein each said bearing surface is being contacted by said at least one lip on said mounting bracket, and angled at said acute angle relative to said support sleeve, for the purpose of holding said plurality of magnets in place, and producing an increasing or decreasing magnetic field as the encoder moves onto or off a sensor.

Leuthold et al. teach the construction of a crowned conical bearing having seal cones (37, 38), seal O-rings (39, 40), and shield seals (41, 42) angled at different acute angles relative to the spindle shaft (30) and bearing seats (32, 33) for the purpose of maximizing the advantages of spherical and conical bearings while at the same time minimizing their respective disadvantages.

It would have been obvious to one skilled in the art at the time the invention was made to use the tapered magnets disclosed by Chitayat and the different acute angles of the seals disclosed by Leuthold et al. on the magnet support sleeve disclosed by Unger for the purpose of maximizing the advantages of spherical and conical bearings while at the same time minimizing their respective disadvantages when holding said plurality of magnets in place, and producing an increasing or decreasing magnetic field as the encoder moves onto or off a sensor.

4. With regards to claims 6, Unger in view of Stokes, further in view of Leuthold et al. disclose at least one bracket comprising a mounting ring circumferentially fastened to said

support sleeve, and said at least one angled lip extends from said at least one mounting ring over said plurality of beveled bearing surfaces on said plurality of magnets.

5. With regards to claim 8, it would have been obvious to one having ordinary skill in the art at the time the invention was made to set the first acute angle greater than the second acute angle, and between two and four degrees, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

6. With regards to claim 9, it would have been obvious to one having ordinary skill in the art at the time the invention was made to set the first acute angle to be about 45 degrees, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Borsch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pedro J. Cuevas whose telephone number is (703) 308-4904. The examiner can normally be reached on M-F from 8:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor R. Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3432 for After Final communications.

Application/Control Number: 09/919,533

Page 5

Art Unit: 2834

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Pedro J. Cuevas
October 30, 2003

A handwritten signature in black ink, appearing to read 'N. Ponomarenko', with a long horizontal flourish extending to the right.

Nicholas Ponomarenko
Primary Examiner
Technology Center 2806